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First Report of Leaf Spot of *Salvia elegans* Caused by *Alternaria alternata* in Italy.

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Salvia elegans, common name pineapple sage, is a perennial plant belonging to the Lamiaceae family, producing fruit-scented leaves and red inflorescences and used for mix borders in parks and gardens. During the summer of 2017, chlorosis and irregular brown necrosis were observed on the leaf margins and on the leaf surfaces of 6-8-month-old plants growing in a private garden located in Biella province (northern Italy). Affected leaves dropped prematurely. A fungus producing green colonies showing light and dark concentric rings was isolated from affected tissues on potato dextrose agar (PDA). The isolates, grown on Potato Carrot Agar (PCA) (Simmons 2007), at light/dark (14h/10h), produced olivaceous, roughened, ovoid to obclavate conidia measuring $9\text{--}31 \times 6\text{--}13$ (average: 17×8) μm . Conidia were multicellular, with 1-5 transverse and 0-2 longitudinal septa. The beak was 2-5 (average: 3) μm long or absent. On the basis of these morphological characteristics the fungus was identified as *Alternaria* sp. (Simmons 2007). DNA was extracted from one isolate by using the E.Z.N.A. Fungal DNA Mini Kit (Omega Bio-Tek, Darmstadt, Germany). A PCR reaction was performed using primers ITS1/ITS4 (White et al. 1990) to amplify the internal transcribed spacer (ITS) region of rDNA. The PCR product was purified and sent for sequencing to BMR Genomics (Padova, Italy). The obtained ITS sequence was not able to differentiate the species of *Alternaria*. Therefore, the portion of the histone 3 gene was amplified with the primers H31a (5'-ACTAAGCAGACCGCCCGCAGG-3') and H31b (5'-GCGGGCGAGCTGGATGTCCTT-3') (Glass and Donaldson 1995) and sequenced. A BLASTn search of the 423-bp sequence (GenBank accession number MG213850) showed 100% similarity with *A. alternata* (KF280540). Pathogenicity tests were performed by inoculating leaves of three healthy plants of *S. elegans* with a pure culture of the fungus grown on PDA. Controls were treated with PDA without the inoculum. Successively, all plants were kept in a plastic bag for 7 days. First symptoms of necrosis developed about 10 days after the inoculation only on inoculated leaves. From these one was reisolated *A. alternata* whereas control plants remained healthy. *A. alternata* has been reported on *S. officinalis* and *S. guaranitica* (Kameniecki et al. 2013) in Argentina, on *S. officinalis*, *S. nemorosa* and *S. farinacea* in Poland and in Japan. To our knowledge, this is, the first report of *A. alternata* on *S. elegans* in Italy. Although the importance of this disease is, at present, limited, it can increase for the expanding use of *S. elegans* for landscaping.

References

- 35 Glass, N. L., and Donaldson G. C. 1995. *Applied and Environmental Microbiology* 61:1323-1330.
- 36 Kameniecki, M., et al. 2013. *American Journal of Plant Sciences* 4:36-41.
- 37 Simmons, E. G. 2007. *Alternaria*. An identification manual. CBS Fungal Biodiversity Centre,
- 38 Utrecht, The Netherlands.
- 39 White, T. J., et al. 1990. Page 315. In: *PCR Protocols: A Guide to Methods and Applications*. M. A.
- 40 Innis et al., eds. Academic Press Inc., New York.